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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/530,720 | 04/08/2005 | Masahiro Kimata | 403368/SAKAI | 2094 |
| 23548 7590 04/10/2007 LEYDIG VOIT & MAYER, LTD 700 THIRTEENTH ST. NW SUITE 300 WASHINGTON, DC 20005-3960 | | | EXAMINER BEHM, HARRY RAYMOND | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2838 | |
| SHORTENED STATUTORY PERIOD OF RESPONSE | | MAIL DATE | DELIVERY MODE | |
| 3 MONTHS | | 04/10/2007 | PAPER | |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/530,720

Applicant(s)

KIMATA ET AL.

Examiner

Harry Behm

Art Unit

2838

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11, 15 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 8 is/are rejected.
- 7) ☒ Claim(s) 2-7, 9, 11, 15, 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to the amended claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

Claims 2,3,4,5,8,9,11 and 15 are objected to because of the following informalities: 'the zero-voltage vector' lacks antecedent basis. Appropriate correction is required.

Claims 8 and 9 are objected to because of the following informalities: 'the fixed time' lacks antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Platnic (US 6,049,474).

With respect to Claim 1, Platnic discloses an apparatus (Fig. 1 5) for controlling a power converter (Fig. 1 1) in which an output voltage is controlled by pulse-width-modulation control (Fig. 4 Sa), the apparatus comprising: a voltage-vector control unit (Fig. 1 5 generates commands Sa,Sb,Sc and complements) that determines, based on a voltage instruction value for the power converter, voltage vectors [vector Sa,Sb,Sc

Art Unit: 2838

and complements] output from the power converter in one control cycle of the pulse-width-modulation control and durations (Fig. 4 U1,U2) of outputting of the voltage vectors; a voltage-vector adjusting unit that adjusts (Fig. 6 23) the durations of outputting of the voltage vectors based on a comparison of the duration of outputting of the voltage vectors with a duration longer than zero (Fig. 6 23 min); and a firing-pulse generating unit (Fig. 1 5) that generates a signal [Sa] for turning on and off a semiconductor switching element (Fig. 2 8) included in the power converter based on the durations of outputting of the voltage vectors as adjusted by the voltage-vector adjusting unit [if the computed on time U1 or U2 is less than the minimum time MIN, the on time is set equal to the minimum period at step 26 or 29 in Fig. 6].

With respect to Claim 8, Platnic discloses the apparatus according to claim 1, wherein the voltage-vector adjusting unit adjusts the durations (Fig. 6 26 or 29) of outputting of the voltage vectors so that the durations of outputting of the zero-voltage vector [all 3 phases Sa, Sb and Sc are on or off as shown in Fig. 4] is ensured at least for a fixed time (Fig. 5 time period from x or x' to U1 and U2 to U2 is greater than zero).

Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Kerkman (US 5,671,130).

With respect to Claim 1, Kerkman discloses an apparatus (Fig. 4 11,7,20) for controlling a power converter (Fig. 4) in which an output voltage is controlled by pulse-width-modulation control (Fig. 4 Sa), the apparatus comprising: a voltage-vector control unit (Fig. 4 20,7,11) that determines, based on a voltage instruction value for the power converter, voltage vectors (Fig. 4 51-56) output from the power converter in one control

Art Unit: 2838

cycle of the pulse-width-modulation control and durations (Fig. 6 pulse widths) of outputting of the voltage vectors; a voltage-vector adjusting unit that adjusts (Fig. 9 111') the durations of outputting of the voltage vectors based on a comparison (Fig. 9 109') of the duration of outputting of the voltage vectors with a duration longer than zero (Fig. 9 MIN PULSE); and a firing-pulse generating unit (Fig. 4 11) that generates a signal [51] for turning on and off a semiconductor switching element (Fig. 4 39) included in the power converter based on the durations of outputting of the voltage vectors as adjusted by the voltage-vector adjusting unit [if the computed on time is less than the minimum time MIN PULSE, the on time is set equal to the minimum period LIMIT MIN at step 111' in Fig. 9].

With respect to Claim 8, Kerkman discloses the apparatus according to claim 1, wherein the voltage-vector adjusting unit adjusts the durations (Fig. 6 26 or 29) of outputting of the voltage vectors so that the durations of outputting of a zero-voltage vector [all 3 phases are on or off] is ensured [any pulse is ensured to be on for the minimum pulse time, therefore, the zero vector minimum is ensured] at least for a fixed time (Fig. 9 LIMIT MIN greater than zero).

Allowable Subject Matter

Claims 2, 9 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Art Unit: 2838

With respect to Claim 2, the prior art does not disclose or suggest, in combination with the limitations of the base claim and any intervening claims, primarily, wherein when the duration of outputting the zero-voltage vector is shorter than the predetermined time, the duration of outputting the zero-voltage vector becomes zero.

With respect to Claim 9, the prior art does not disclose or suggest, in combination with the limitations of the base claim and any intervening claims, primarily, wherein duration of outputting of the zero-voltage vector is ensured at least for the fixed time without changing relative ratio of output durations of voltage vectors other than the zero-voltage vector.

With respect to Claim 19, the prior art does not disclose or suggest, in combination with the limitations of the base claim and any intervening claims, primarily, wherein the duration of outputting of zero voltage vector is longer than a fixed time greater than zero or is zero.

The aforementioned limitations in combination with *all* remaining limitations of the respective claims are believed to render the aforementioned indicated claim and any dependent claims thereof patentable over the art of record.

With respect to Claims 3-7, 11 and 15, reasons for indicating allowable subject matter have already been indicated in the Office Action dated 11/8/06.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry Behm whose telephone number is 571-272-8929. The examiner can normally be reached on Business EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



KARL EASTHOM
SUPERVISORY PATENT EXAMINER